## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

## (19) World Intellectual Property Organization International Bureau





(43) International Publication Date 8 January 2004 (08.01.2004)

**PCT** 

# (10) International Publication Number WO 2004/004130 A2

(51) International Patent Classification7:

.

H03M 1/10

(21) International Application Number:

PCT/GB2003/002681

(22) International Filing Date: 24 June

24 June 2003 (24.06.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 0214742.9

26 June 2002 (26.06.2002) GE

- (71) Applicant (for all designated States except US): BAE SYSTEMS PLC [GB/GB]; 6 Carlton Gardens, London SW1Y 5AD (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): WOOD, John, Michael [GB/GB]; BAE Systems ATC, West Hanningfield Road, Great Baddow, Chelmsford, Essex CM2 8HN (GB). COOTE, Nigel, Charles, Trueman [GB/GB]; BAE Systems, Building 20E, Broad Oak Business Park, Hilsea, Portsmouth, Hampshire PO3 4LY (GB).

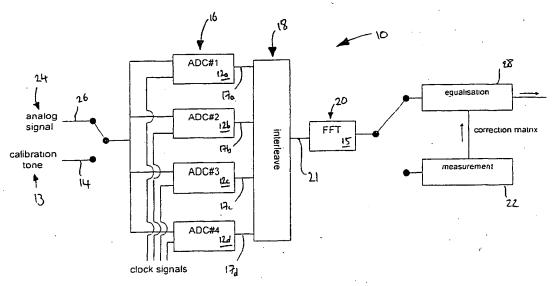
- (74) Agent: GROUP IP DEPARTMENT; Bae Systems plc, Lancaster House, P.O. Box 87, Farnborough Aerospace Centre, Farnborough, Hampshire GU14 6YU (GB).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Published:

 without international search report and to be republished upon receipt of that report

[Continued on next page]

### (54) Title: IMPROVEMENTS RELATING TO TIME-INTERLEAVED SAMPLERS



(57) Abstract: This invention relates to a method of calibrating a time-interleaved analogue-to-digital sampler (10) and to a method of performing analogue-to-digital conversion with a sampler (10) so calibrated. The invention provides a method of calibrating a sampler (10) comprising N time-interleaved ADCs (12a-d), the method comprising the steps of: (a) injecting in turn N calibration signals (13) into the sampler such that each calibration signal (13) occupies one of N related frequencies; (b) determining the input signal for each one of the N calibration frequencies (13); (c) measuring in the frequency domain the output at each of the N related frequencies for each one of the N calibration frequencies; and (d) determining the relationship that relates the input signal to the output at each of the N related frequencies for each one of the N calibration frequencies.